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SUBJECT: Forwards response to NRC SE of inservice testing program for pumps & valves,transmitted via 920507 ltr,which identified 18 program anomalies.Relief Request RV-22 for emergency chilled water valves encl.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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July 6, 1992
G02-92-159

Docket No. 50-397

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Subject: WNP-2, OPERATING LICENSE NPF-21
INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES (TAC NO. 60493)

References:
1) Letter dated May 7, 1991, PL Eng (NRC) to GC Sorensen (SS), "Safety Evaluation of the Washington Public Power Supply System Nuclear Project No. 2 (WNP-2) Inservice Testing Program for Pumps and Valves (TAC No. 60493)"
2) Letter G02-91-220 dated December 3, 1991, GC Sorensen (SS) to NRC, "WNP-2 Inservice Testing Program for Pumps and Valves (TAC No. 60493)"
3) Generic Letter 89-04 dated April 3, 1989, "Guidance on Developing Acceptance Inservice Testing Programs"

The NRC provided an evaluation to the Supply System IST Program in Reference 1. This evaluation identified 18 program anomalies. Reference 2 contained the Supply System response to those 18 items and 3 additional relief requests. Although most of the 18 items were resolved, four of them remained open with an interim or provisional relief. Attachment A to this letter serves to status those open items. Two relief requests are still outstanding.

The resolution of Item 12, required the investigation of alternative testing techniques for solenoid pilot valves in the Containment Instrument Air System (CIA) and for temperature control valves in the Standby Service Water System (SW). These valves were tested during the R7 refueling and maintenance outage. An evaluation of the testing techniques and results has lead to the revision of the relief request RV-22 for the SW valves. The relief request is included as Attachment B to this letter.

Sincerely,

GC Sorensen

G. C. Sorensen, Manager
Regulatory Programs (Mail Drop 280)

MGE/bk
Attachments

cc: JB Martin - NRC RV
NS Reynolds - Winston & Strawn
RR Assa - NRC
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DL Williams - BPA/399

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2. The licensee has proposed to use pump vibration velocity measurements rather than vibration displacement measurements. This method has been demonstrated to provide better indication of pump degradation. Relief should be granted provided the licensee complies with all of the OM-6 vibration measurement requirements.

Supply System Response:

All of the vibration measurement requirements of OM-6 have been incorporated into the IST Program Plan with the exception of acceptance criteria for the diesel fuel oil transfer and fuel pool cooling pumps. The acceptance criteria for the pumps are as shown in TER Section 2.1.5.1.1 which has been incorporated into the surveillance procedures. The acceptance criteria for certain pump locations are not specified in the revised surveillance procedures. This criteria will be determined and included in the procedures upon completion of the performance of the regularly scheduled surveillances.

Action Taken

All surveillance procedures have been revised to comply with all of the OM-6 vibration measurement requirements.

3. The licensee has requested relief from the vibration acceptance criteria of OM-6 for the fuel pool cooling and diesel fuel oil transfer pumps and proposed alternate limits and to evaluate the feasibility of reducing the vibration levels to the OM-6 upper limits. The licensee's proposed limits do not provide an acceptable long-term alternative. Interim relief should be granted for one year or until the next refueling outage, whichever is longer.

Supply System Response:

The surveillance procedures for these pumps have been modified to use the expanded limits on an interim basis. During the extended R-6 outage diesel fuel oil transfer pump, DO-P-2, was disassembled to determine the cause of the high vibration. Some problem areas were identified and are being investigated. Though we feel confident that the existing vibration levels can be reduced considerably, meeting OM-6 acceptance limits may require major design changes. Evaluation of high vibration of the diesel fuel oil and fuel pool cooling pumps is continuing.

Action Taken

Diesel fuel oil transfer pumps were modified during the 1992 refueling outage by installing a specially designed "dynamic absorber" on the pumps to reduce the vibration. Vibration levels for the pumps with the modification have been reduced tremendously and the new reference values and acceptance criteria is well within the acceptance limits of OM-6. Acceptance criteria of fuel pool cooling pumps has also been revised to be in compliance with OM-6 requirements.

12. The licensee has requested relief from the Section XI stroke time measurement requirements for various power operated valves and proposed to verify these valves stroke quarterly but not measure stroke times. The licensee's proposal to verify valve operation observing various system or component indications should demonstrate these valves operate but is not likely to detect valve degradation, short of complete failure. Therefore, the proposed testing does not provide a reasonable long term alternative to the Code requirements. Interim relief should be granted for one year or until the next refueling outage, whichever is longer. During this interim period, the licensee should consider methods, such as ultrasonics, magnetics, and acoustics for stroke timing or otherwise adequately monitoring the condition of these valves, and should determine appropriate acceptance criteria so that a severely degraded valve is identified for corrective action.

Supply System Response:

Plant Technical will pursue alternative testing techniques which are in compliance with ASME Section XI. As indicated below, two relief requests have been deleted from Revision 4 of the IST Program Plan due to deletion of the valves from their system. Before completion of R7, the Supply System will address the remaining two and potential testing techniques.

| TER SECTION | RELIEF | VALVE | REMARKS |
|---|---|---|---|
| 3.5.1.1 | RV-21 | SW-V-214,215, 216,217 | These valves have been deleted. RV-21 deleted. |
| 3.9.2.1 | RV-24 | CIA-SPV-1A-15A -1B-19B | Alternatives are being investigated by R-7. |
| 3.12.1.1 | RV-12 | DO-V-40A,B | These valves have been deleted. RV-12 deleted. |
| 3.13.1.1 | RV-22 | SW-TCV-11A,11B, 15A,15B | Alternatives are being investigated by R-7. |

Action Taken

CIA-SPV-1A through 15A, 1B through 19B

A testing technique was developed to stroke time these valves as required by IWV-3413. All of these valves were successfully tested once during the R7 refueling outage (June 1992). Reference values and acceptance criteria shall be established after performance of the next two scheduled surveillances or R8 refueling outage (Spring 1993) whichever is sooner. This is to ensure that repeatable stroke times are achievable with the test techniques in order to identify severely degraded valves.

SW-TCV-11A, 11B, 15A and 15B

An alternative testing technique and test frequency for SW-TCV valves is discussed in the revised relief request RV-22, included as Attachment B to this letter.

13. The licensee's proposed test method for the identified hydraulic control system valves does not provide an adequate demonstration of valve operability since it only monitors the stroke time of the slowest valve of the group for an indication of degradation. The proposed testing does not provide a reasonable alternative to the Code requirements, the licensee has not demonstrated the impracticality of performing this testing in accordance with the Code requirements and the Code requirements are not considered excessively burdensome, therefore, relief should not be granted as requested. These valves should be stroke time tested individually each cold shutdown in accordance with the Code requirements.

Supply System Response:

The surveillance procedure has been revised to require these valves to be stroke time tested individually at cold shutdown, which meets Code requirements. Acceptance criteria for these valves will be established after the test is conducted at the next cold shutdown or refueling outage.

Action Taken

The Hy valves have been successfully stroke time tested four times since September 1991. Reference values and acceptance criteria for each valve have been established in accordance with ASME section XI requirements.

ATTACHMENT B

RELIEF REQUEST NO. RV-22 (Revised, Date_____)

System: Emergency Chilled Water

Valves: SW-TCV-11A, 11B, 15A, 15B

ASME Classification: Code Class 3, Category B

Code Testing:
1. IWV-3411, Test Frequency
2. IWV-3413, Stroke Time of Power Operated Valves.

Basis for Relief:

1. All four of these hydraulically actuated valves serve as regulating thermostatic control valves. The valves do not function to rapidly isolate or de-isolate the piping into which they are installed. Rather, their function is to slowly regulate throughout their entire stroke range to control the outlet temperatures of the components they serve in response to a 4-20 mA control signal provided by their respective instrument control loops. The valves are spring-to-open/oil-to-close; recirculating oil pumps inside the actuators for the valves constantly apply a source of oil to a piston that acts against the spring. The 4-20 mA control signal varies the amount of oil constantly bled from the operating piston (back to the internal actuator reservoir). In this fashion the valves are regulated anywhere within the entire stroke length. SW-TCV-11A & 11B are controlled by thermostats which regulate main control room air temperature. SW-TCV-15A & 15B regulate service water flow leaving the condenser of the emergency control room chillers and are controlled by the control logic for those units.

2. It is difficult to accurately measure the stroke time of these valves. None of these valves are provided with any form of override that would allow them to be manually cycled. Additionally, none of them are provided with position indication. Partial stroking of these valves can be verified by observing system operational parameter changes, but accurate timing of full stroke for trending purposes is impractical.

3. Manual control of these valves can only be obtained by lifting the 4-20 mA control leads to inject a test signal to the hydraulic actuator. This in turn requires that the Technical Specification required systems they serve be taken out of service. The systems they serve are required to remain in service when the plant is not shut down.

4. Modification of the existing valves or installation of new valves to provide manual control and position indication would be burdensome and costly.

Alternate Testing to be Performed:

1. Annually, during each refueling outage, perform a full calibration verification of the actuator for each of these valves per instructions provided by the valve vendor ITT General Controls Division. Each calibration verification is performed with the actuator coupled to its valve. A variable 4-20 mA test signal is applied to the actuator, and the actuator is verified to respond to stroke the valve in a linear fashion throughout its entire stroke length (i.e. from full open to full closed). Full stroke length of the valve is measured and verified that it is within acceptable range. Stroke length outside the acceptable range will indicate valve degradation requiring corrective action.

2. Concurrently with the testing described in (1) above, the fail-safe position on a loss of power (OPEN) shall be verified.

Implementing Schedule:

All these valves have been calibration tested during the 1992 refueling outage and shall be calibration tested annually during each refueling outage. This relief request supersedes the testing requirements specified in existing Relief Request RV-22.

Quality/Safety Impact:

The alternative testing to be performed (actuator calibration verification) will verify proper operation of the valve to meet its design function. These valves are designed to operate as slow moving regulating valves and must be able to achieve and maintain any position called for by its control instrumentation. Inability to meet the tolerances of the calibration throughout the entire range of motion will require further investigation (e.g. valve maintenance) to correct the problem to produce a satisfactory calibration check. Because the valves cannot be tested without the adverse affect of taking the associated required safety related systems out of service, testing will be annual vice quarterly. However, this form of testing is more rigorous than a quarterly stroke time test of the valves. Consequently, lengthening the time interval will not preclude timely evaluation of valve operability. Adequate assurance of material quality and maintenance of public safety will be provided.

NRC Acceptance:

Pending